

A NEW SPECIES OF THE GENUS *MIXOCERA* WARREN  
(SUBFAMILY: GEOMETRINAE)<sup>1</sup>

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(With seven text-figures)

The genus *Mixocera* Warren is so far represented by a single Indian species namely *parvulata* (Walker) (Prout 1913). Out of a total of 99 species of the family Geometridae studied by us, one new species falls under genus *Mixocera* Warren. The present communication includes the complete description of *Mixocera albilineata* sp. nov., a revised characterization of genus *Mixocera* Warren and a key to the 2 Indian species of this genus.

GENUS *MIXOCERA* Warren

*Mixocera* Warren, 1910, Nov. Zool., 8: 206; Prout, 1912, Gen. Ins., 129: 1934, Seitz Macrolep., 12: 133.

*Gynandria* Turner, 1910, Proc. Linn. Soc. N. S. Wales, 35: 575; Gen. Ins., 129: 243 (subgen.)

*Thelycera* Prout, 1912, Gen. Ins., 129: 243 (subgen.)

Frons smooth. Antenna weakly bipectinate to nearly simple or ciliated, varying in both sexes. Labial palpus in both sexes short; second segment shortly rough scaled; third segment minute. Proboscis weak. Hind tibia in both sexes with only terminal spurs. Abdomen not crested. Fore wing with costa slightly arched or even nearly straight; apex acutely angulate; termen smooth, oblique or gently curved. Discal cell about half of wing length; DC<sub>2</sub> more or less curved. R<sub>1</sub> from near apex of cell or from base of stalk of R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and M<sub>1</sub> or anastomosing with or running into

Sc; R<sub>2</sub> arising from before R<sub>5</sub>; Cu<sub>1</sub> from before or angle or shortly stalked with M<sub>3</sub>. Frenulum absent in both sexes. Hind wing with apex rounded; termen moderately to rather strongly rounded; Discal cell less than one-half; discocellulars oblique, at least posteriorly. Sc + R<sub>1</sub> shortly appressed to or anastomosing with cell near base, then diverging; R<sub>s</sub> and M<sub>1</sub> stalked; M<sub>3</sub> and Cu<sub>1</sub> shortly stalked, occasionally both veins from lower angle of cell. Uncus beak-shaped; socii slender; gnathos ring-like; coremata present. Valva long; sacculus produced into a pointed finger-like structure; aedeagus broad in posterior two-third length.

Type-species: *Mixocera parvulata* (Walker)

The only Indian species namely *parvulata* (Walker) under the present genus (Prout 1913) could not be collected for study but a new species from a different locality is described.

KEY TO THE SPECIES OF *Mixocera* WARREN

Thorax and abdomen bluish green; fore wing with a curved antemedial and obliquely straight post-medial white line; underside green, with prominent postmedial band .....*albilineata* sp. nov.  
Thorax and abdomen white; forewing having only an oblique postmedial white band; underside white, unmarked.....*parvulata* (Walker)

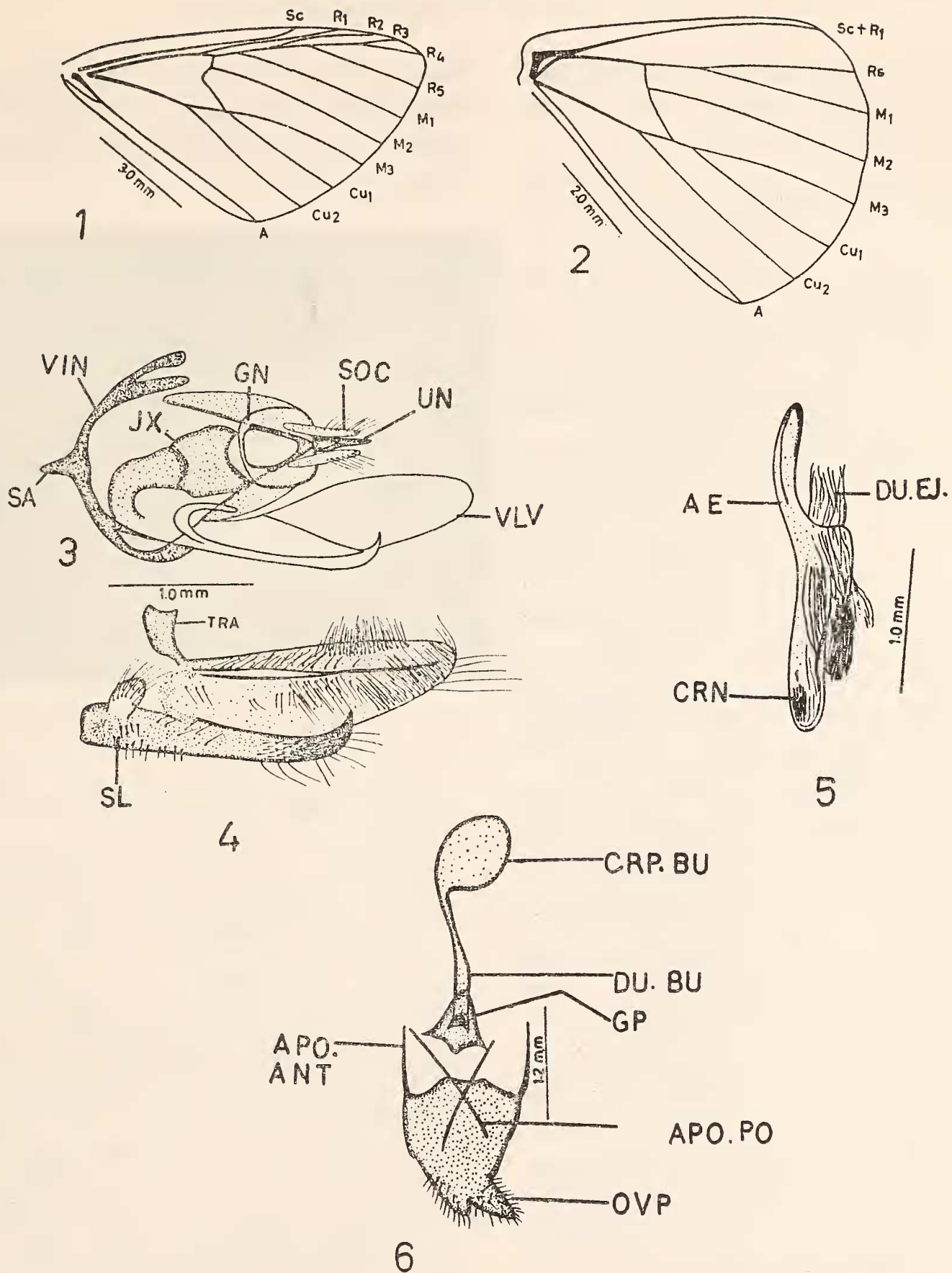
***Mixocera albilineata* sp. nov.** (Figs. 1-7)

MALE. Head with vertex covered with white scales; frons yellowish brown. Antenna serrate and fasciculate, cilia long; flagellum slightly longer than half the length of forewing. Eyes black, with a row of white scales behind. Labial

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Figs. 1-6. *Mixocera albilineata* sp. nov.

Figs. 1,2. Fore and Hind wings; 3,4,5. Male genitalia; 6. Female genitalia.  
 Abbreviations: 2A, Second anal vein; AE, Aedeagus; APO. ANT., Anterior apophyses; APO. PO, Posterior apophyses; CRN, Cornutus/cornuti; CRP. BU, Corpus bursae; Cu<sub>1</sub>, First cubitus; Cu<sub>2</sub>, Second cubitus; DU. BU, Ductus bursae; GN, Gnathos; JX, Juxta; M<sub>1</sub>, First medius; M<sub>2</sub>, Second medius; M<sub>3</sub>, Third medius; OVP, Ovipositor; R<sub>1</sub>, First radial; R<sub>2</sub>, Second radial; R<sub>3</sub>, Third radial; R<sub>4</sub>, Fourth radial; R<sub>5</sub>, Fifth radial; Rs, Radial sector; SA, Saccus; Sc, Subcosta; Sc + R<sub>1</sub>, Stalk of Sc and R<sub>1</sub>; SL, Sacculus; SOC, Socii; TRA, Transtilla; UN, Uncus; VIN, Vinculum; VLV, Valva.

palpus with first and second segments pale ochraceous, sparingly suffused with brown; third segment tipped with white scales.

Thorax bluish green dorsally, white ventrally. Forewing with termen obliquely arched. Ground colour bluish green; a curved antemedial and obliquely straight postmedial line white; marginal fringe green, with a light green band. Underside green, with a straight white postmedial band.  $M_3$  and  $Cu_1$  very shortly stalked from lower angle of cell. Hindwing with ground colour bluish green, with only white postmedial, slightly arched line; marginal fringe green with a light green band. Underside as described under fore wing.  $R_s$  and  $M_1$  long stalked from upper angle of cell;  $M_3$  and  $Cu_1$  on a comparatively shorter stalk. Legs clothed with white appressed scales; hind tibia not dilated.

Abdomen bluish green on upperside, without dorsal tufts; underside white. Male genitalia with uncus narrowly beak-shaped and pointed distally, strongly sclerotized, completely bare; socii shorter than uncus, tubular, bearing short setae; gnathos squarish, weakly sclerotized; tegumen with V-shaped thickening; vinculum broadly U-shaped, produced into a short conical saccus. Valva long and narrow; costa with basal half bare, distal half densely setosed; sacculus well sclerotized, produced distally into an arched, shortly dentate and sharply pointed process; coremata present. Aedeagus long, with its anterior one-third part slender and bent, remaining two-third distal portion broad; vesica adorned with a bunch of long spines in addition to other sclerotized patches and lines, distal end of vesica also carrying a few short spines. Female genitalia with corpus bursae globular, membranous and marked with wrinkled channels distally; ductus bursae more or less as long as corpus bursae, very wide, well sclerotized, with its surface minutely denticulate anteriorly; genital plate rugose, mode-

rately sclerotized; anterior apophyses straight, less than half of posterior apophyses, the latter slightly curved; ovipositor lobes furnished with numerous setae.

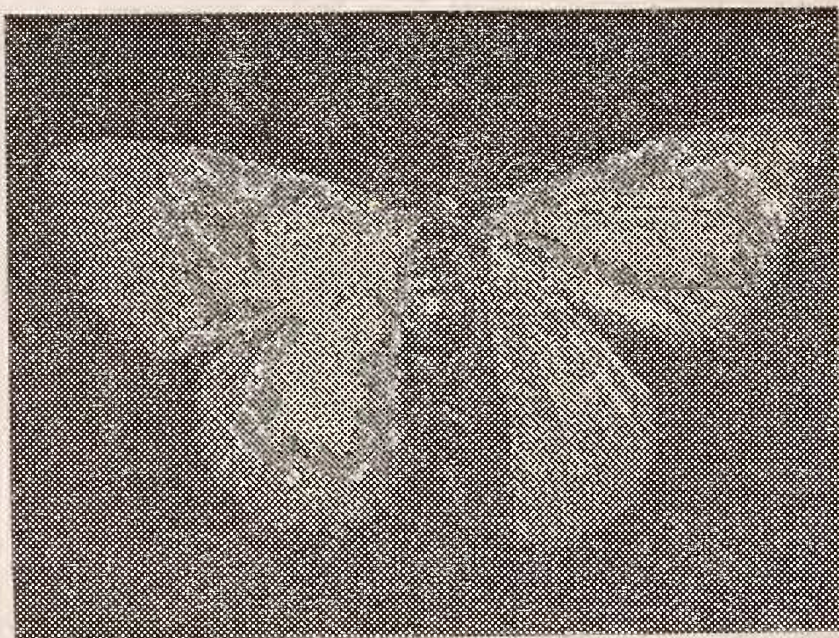


Fig. 7. *Mixocera albilineata* sp. nov.

Wing expanse (Half): Male 12 mm; Female 12 mm.

Holotype ♂, INDIA: HIMACHAL PRADESH: Chambaghat, 14.viii.1978, light, Coll. V. K. Walia. Allotype ♀, same data as for holotype. Paratypes; 7 ♂, Chambaghat, August, light, Coll. V. K. Walia. (Types in Entomology Section, Department of Zoology, Panjab University, Chandigarh).

*Distribution*: INDIA: Himachal Pradesh.

Apart from the much larger size, the new species differs from *parvulata* (Walker) in the coloration of the frons and the wings and in possessing fasciculate and slightly serrate antennae unlike weakly pectinate antennae of *parvulata* (Walker).

#### ACKNOWLEDGEMENTS

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Family Geometridae under which this work was carried out. We are also thankful to Dr. D. S. Fletcher, British Museum (Natural History), London for comparing the material.

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FRESHWATER ALGAE OF KARNATAKA STATE (INDIA):  
*COSMARIUM KAYCEDENSE* SP. NOV. AND *EUGLENA LUNARIS*  
SP. NOV. FROM DHARWAD<sup>1</sup>

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(With two text-figures)

Gandhi (1956) first reported 44 forms of diatoms from Dharwad area. Subsequently, Bharati and Gonzalves (1962) recorded some new species of Desmids from this place and an account of 49 species of Desmids was given by Bharati (1965 and 1966). In an extensive systematic survey of freshwater algae of Dharwad, collections were made from six man-made tanks in the Karnatak College Campus, Dharwad. These tanks are fed with municipal tap water and are being used for growing aquatic plants like *Hydrilla*, *Chara*, *Vallisneria*, *Nymphaea* and *Salvinia*. Samples collected on 25.iv.1978 by squeezing these macrophytes were preserved in 4% formaldehyde solution for further study. They are now deposited in the Phycology Laboratory, Karnatak University, Dharwad.

A detailed study of these samples from Karnatak Science College, revealed two new taxa, belonging to genera *Cosmarium* Corda

and *Euglena* Ehr. They have been described in the present paper.

*Cosmarium kaycedense* sp. nov. (Fig. 1).

Cellulae singulares, parvae, c.  $1\frac{1}{2}$  plo longiores quam latae, ovato-ellipticae, profunde constrictae, sino lineari et ad apicem paululum dilatato; semicellulae pyramidali-truncatae ad apicem, angulis basalibus rotundato-subtriangularibus, lateribus primo parallelis deinde apicem versus divergentibus; apex 13 granula; sex circum granulum centrale, et alia in duobus ordinibus disposita, habens. Semicellula a latere visa elliptica, in centro sex incrassationes granulosas proebens.

Longitudo 36.5-55.5  $\mu\text{m}$ ; Latitudo 28-29  $\mu\text{m}$ ; Isthmus 4-7  $\mu\text{m}$ ; Crassitudo 20  $\mu\text{m}$ .

*Locus typi*: In stagna contra Departmentum Zoologicum Collegii Scientifici Karnatak, Dharwad.

Cells single, small, about  $1\frac{1}{2}$  times as long as broad, oval elliptical, deeply constricted, sinus linear, slightly dilated at the apex; semicells pyramidal-truncate at the apex, basal angles rounded-subtriangular, sides parallel at first, then converging towards the apex which

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